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The Fritz Legacy

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**Lehigh University
Library & Technology Services**

Special Collections

Flyer

THE FRITZ LEGACY

John Fritz, one of Lehigh's original trustees, shared with Asa Packer not only an interest in Lehigh University but also in railroading. Fritz, the world famous inventor of the three-high method for making railroad rails, was reputed even to have driven a Baldwin locomotive from Parkesburg, Chester County to Downingtown. The Baldwin connection, as well as his appreciation for engineering, would become his legacy to Lehigh University.

In 1909, John Fritz, at eighty-seven years old, revoked his will leaving Lehigh a certain sum of money, telling President Henry Drinker that he would rather have the fun, while he was alive, of spending the money building an up-to-date engineering laboratory for training Lehigh's students. He set about to design the laboratory based on his machine shops at the Bethlehem Iron Works, Bethlehem Steel's predecessor, especially in the roofing joists which many years later earned Fritz Engineering Laboratory the American Society of Civil Engineers' Civil Engineering "Landmark" designation.

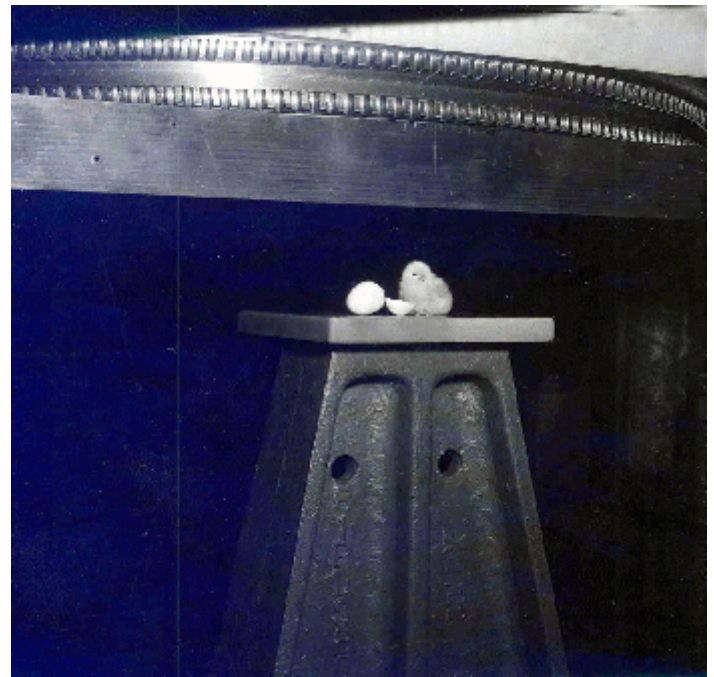
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He recorded in his *Autobiography* that he personally selected much of the equipment and supervised the erection of the laboratory whenever he could be on campus. He fitted the laboratory with what was then the world's largest vertical testing machine, a Riehle test machine, capable of testing tension and compression at 800,000 lb. capacity,. One of the more famous tests accomplished on this test machine was the testing of the cable anchorages for the first Tacoma Narrows bridge, "Galloping Gertie," for Bethlehem Steel, which had manufactured the anchorages .

The laboratory for many years fulfilled John Fritz's dream, but by the early Thirties, the Riehle machine at Lehigh was displaced by the University of California's and the University of Illinois' three-million-pound Baldwin test machines.

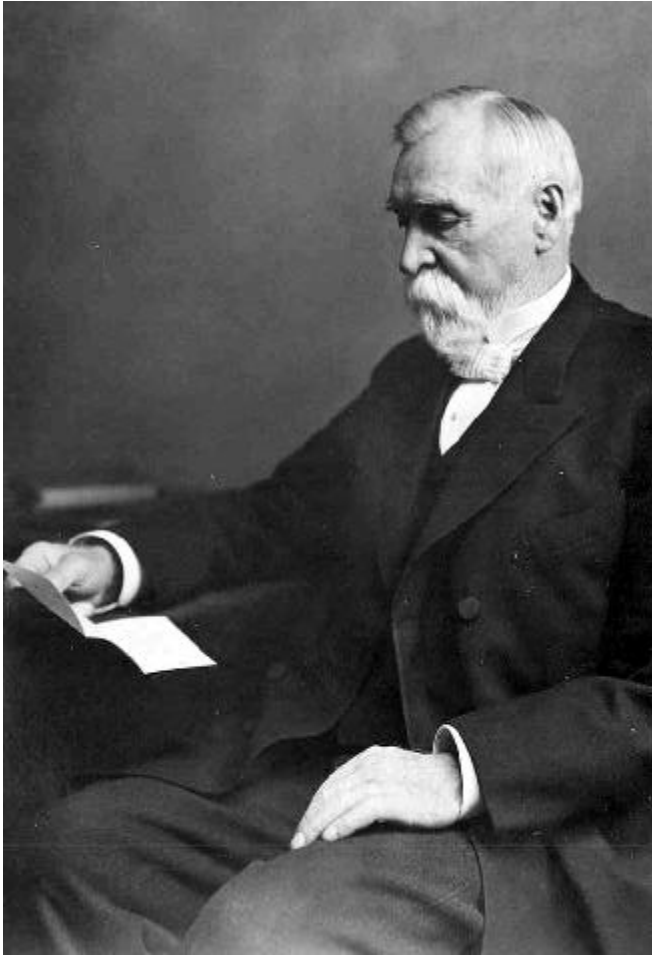
Professor Hale Sutherland, the laboratory's head, approached the Baldwin Locomotive Works to build a machine for Lehigh. However, due to the Great Depression, the University's trustees refused to authorize the project.

Following WWII, Professor William "Bill" Eney with the support of Bethlehem Steel again approached the project. Professor Eney contracted with Baldwin-Lima-Hamilton Corp., the Baldwin Locomotive Works successor, to build for Lehigh a five million pound universal test machine capable of accuracy at the lowest range of 20 lbs (sufficient to crack but not



"Fritzi" hatched by the machine, 1955

crush an egg) up to its highest capacity range of



John Fritz

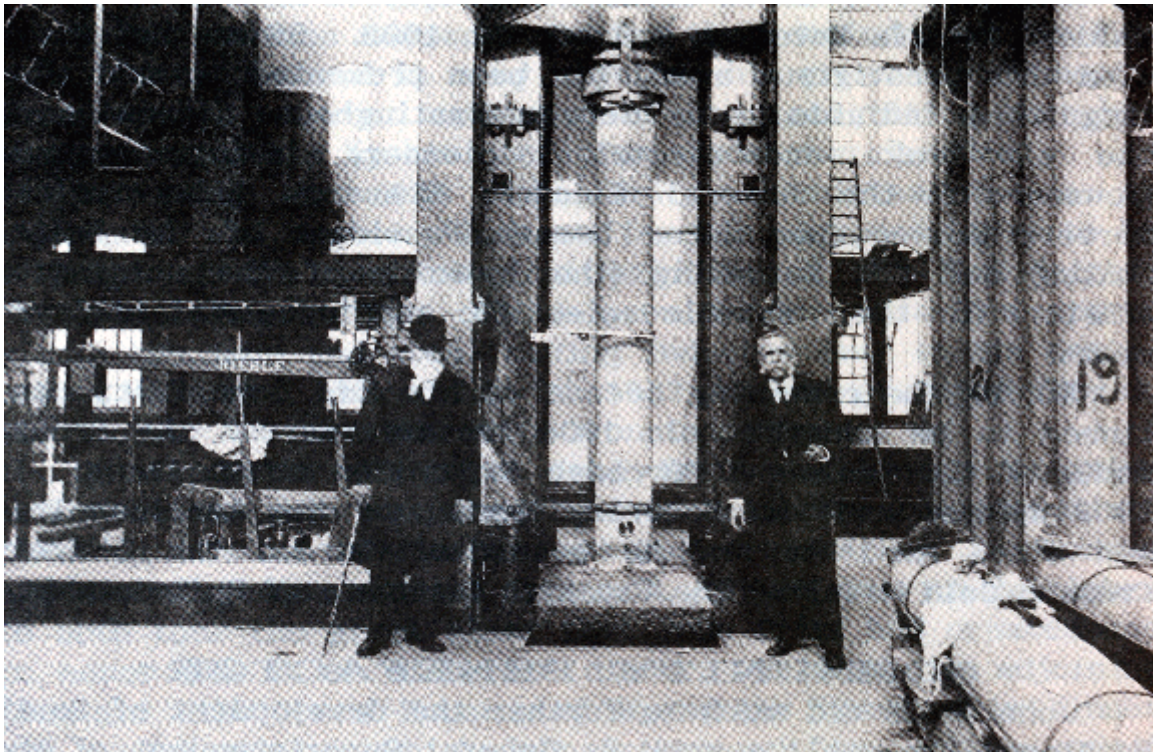
5,000,000 pounds in tension, compression and torsion.

The Baldwin universal test machine's height would be over 60 feet tall above the test floor, with a foundation 16 feet deep requiring an addition to John Fritz's original laboratory. The addition was dubbed "the new Fritz Lab." Some of the tests accomplished in the new facility with, at the time, the world's largest universal test machine were the structural frame for Telstar, the USA's first communications satellite, the cable anchorages for the Verrazano Narrows Bridge, the cables for the Golden Gate and George Washington bridges to anticipate the addition of a second deck.

In 1955, the new Fritz Lab and world's largest universal testing machine were dedicated. Fifty years later John Fritz's legacy continues to educate and excel at Asa Packer's university.

—ELEANOR NOTHELFER

Our thanks to Eleanor Nothelfer for preparing this text, and also for working with Ilhan Citak in the preparation of an exhibition on the history of Fritz Laboratory. This exhibition may be seen in the Bayer Galleria, Linderman Library, between the hours of 1 p.m. and 5 p.m. weekdays, through early May, when Linderman closes for renovation. Call 610 758-4506 for details.



Fritz and President Drinker at the original universal testing machine, 1910

Special Collections materials are available for research and consultation without restriction. For further information contact Philip A. Metzger, Curator of Special Collections, or Ilhan Citak, Special Collections Assistant. Reading room hours are Monday through Friday, 1 p.m. to 5 p.m. or by appointment. Telephone: (610) 758-4506; fax (610) 758-6091; e-mail: inspc@lehigh.edu

